

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555

JULY 21, 1988

NRC INFORMATION NOTICE NO. 88-46, SUPPLEMENT 1: LICENSEE REPORT OF DEFECTIVE
REFURBISHED CIRCUIT BREAKERS

Addressees:

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose:

This information notice supplement is being provided to present additional information regarding customers of the five California electrical suppliers discussed in NRC Information Notice (IN) No. 88-46 that may have supplied defective refurbished electrical equipment, such as circuit breakers (CBs), to nuclear power plants. It is expected that recipients will review this information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

IN 88-46 discussed a report by Pacific Gas and Electric (PG&E) that defective refurbished CBs were supplied to PG&E's Diablo Canyon Nuclear Power Plant by a California electrical supplier. The IN listed four other California companies involved in refurbishing and supplying possibly defective circuit breakers to nuclear power plants. In addition, the IN provided a preliminary list of customers of the five companies and a list of original equipment manufacturers whose names may have been used on surplus or refurbished equipment sold as new equipment obtained during NRC investigations and vendor inspections in progress at the subject companies.

Discussion:

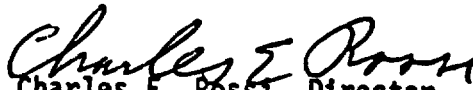
The NRC has obtained additional information from its inspections and investigations related to this issue. Attachment 1 provides a list of shipments of circuit breakers to nuclear power plants or nuclear utilities by the subject electrical suppliers. This list was compiled based on a partial review of records obtained from the five California electrical suppliers discussed in IN 88-46. The majority of the sales were through distributors; however, direct sales and shipments to nuclear utilities have been identified. Except for certain sales to San Onofre for safety-related use, the safety classification of the electrical equipment as sold appears to be commercial grade.

8807200162

ZA

The NRC is continuing its investigations and review of records on this issue and, if warranted, a further generic communication will be issued.

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact one of the technical contacts listed below or the Regional Administrator of the appropriate regional office.



Charles E. Rosst, Director
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

Technical Contacts: K. R. Naidu, NRR
(301) 492-0980

Jaime Guillen, NRR
(301) 492-1170

Attachments:

1. Shipments of Circuit Breakers to Nuclear Power Plants or Nuclear Utilities
2. List of Recently Issued NRC Information Notices

SHIPMENTS OF CIRCUIT BREAKERS
TO NUCLEAR POWER PLANTS OR NUCLEAR UTILITIES

The following list represents shipments of circuit breakers to nuclear plants or utilities from five suppliers in the Los Angeles area. The majority were sold through distributors; however, direct sales to the utilities are identified. Except for the direct sales to San Onofre, classification of the circuit breakers as sold appears to be commercial grade.

Plant or Utility	Items (Qty)	Date	Sold to and Purchase Order Nos.	Invoice ¹	Company ²
Palisades	W EB1020 (2)	9/14/87	WESCO Lansing, MI P03255-87089	I 10995	ATS
Harris	ITE EF3B125(2)	2/9/88	WESCO, Raleigh, NC	WO 24781	CAL BKR
	ITE EF3B125(2)	3/2/88	POs DS3645-80171	WO 25377	CAL BKR
	ITE EF3B125(6)	3/14/88	DS3645-08047	WO 25811	CAL BKR
Dresden	³ W FA 2100 (2)	12/21/87	WESCO Elmhurst, IL	I 14174	HLC
Quad Cities	W EH 2050 (3)	1/18/88	WESCO Davenport, IA D/S5106-259401	I 14673	HLC
	³ W EH2070 (1)	3/10/88	WESCO Davenport, IA S05106-M031010	Unknown	GEN BKR
Connecticut Yankee	W HFB 3050 (3)	8/12/87	Economy Elect Manchester, CT DS08127-995428	I 12585	HLC
Mark 860590	W STARTER CONTROLS	6/25/87	06157-730176	I 11752	"
	A200M1CAC (13)		"		"
	A201K1CA (8)		"		"
	A201K2CA (4)		"		"
	AN13A (6)		"		"
	W HFD 3020 (12)	6/16/87	06167-740072	I 11760	"
Braidwood	W MA3600 (1) w/ bell alarm	7/15/86	WESCO Elmhurst, IL	I 07721	"
Ginna	W FA3125 (3)	9/26/84	WESCO Rochester, NY 93095	I 30501	GEN MAG
	W EA2090 (3)	"	"	I 30371	"
	W FA3125 (3)	"	"	"	"
Clinton (Baldwin Associates)	SD Q0220 (10)	7/18/84	WESCO Peora, IL 91586	I 29708	"
Rancho Seco (SMUD)	W JB3100 (2)	8/8/84	WESCO Sacramento, CA 90629	I 29971	"
	W/LINE & LOAD LUGS		SMUD		
	FPE NEF433030 (1)	3/6/87	RN870356713	I 27290	GEN BKR

<u>Plant or Utility</u>	<u>Items (Qty)</u>	<u>Date</u>	<u>Sold to and Purchase Order Nos.</u>	<u>Invoice¹</u>	<u>Company²</u>
SONGS	GE TED134030WL (1)	6/10/88	Southern Ca. Edison	I 102174	ECD
	IT BQ2B030	6/9/88	8B068300 8W068023	I 102193	ECD
Lilco	FPE NF631100(2)	6/12/86	Graybar Hauppauge, NY(540-BLP901363)	I 7297	HLC
Mississippi Power Co.	W F2020 (1)	1/30/86	WESCO, Mobile, AL DS-3725-860126	I 5585	HLC
PG&E	W EH2100 (1)	3/5/86	AMFAC, Stockton, CA D7232-8980	I 6076	HLC
	FPE NE224060(2)	4/11/88	CED, San Luis Obispo, CA 7605087444D	I 15793	HLC
	W HMC3800F (1)	1/28/88	7605-D76367D	I 14829	HLC
	8MC800 (1LOT)	"	"	"	"
	LUGS (3)	"	"	"	"
	ITE EE3B050(1)	11/3/87	7605D-76116D	I 13783	"
	EE3B030 (1)	"	"	"	"
	W EB3050 (1)	10/2/87	7605-D209190D	I 13333	"
	FPE NE224100 (2)	5/13/88	7605-D87976D	I 16309	"
Detroit Ed.	IT EH3B100 (1)	3/18/88	Detroit Ed. Monroe Pwr plant (190501)	I 11510	ATS
	SD 989316 (2)	11/23/87	Splane Electric Detroit, MI(111275)	WO 02160	ATS
CECo	IT EF3B070	6/3/87	Graybar Melrose Pk, IL (328M502114CS)	I 10684	ATS
	³ W EH2070 (4)	12/22/87	WESCO Davenport, IA WS5106-258143	I 31399	GEN BKR
Consumers Power Co.	W HDEA2030 (1)	3/30/88	WESCO Lansing, MI DS3255-14766	I 11530	ATS
Southern Cal. Edison	IT FJ3B225 (1)	4/22/88	SCE Construction Forces (117053L)	I 34435	AC BKR
	IT EE3B070 (3)	"	117055L	I 34436	"
	EE2B100 (1)	"	"	"	"
	EE2B050 (2)	"	"	"	"
	EE2B030 (1)	"	"	"	"
	GE TEF134015 (1)	6/15/78	GESCO El Monte, CA	I 11734	HLC
	W EB2030 (2)	5/2/88	Southern Ca. Edison H1238007	I 101586	ECD
	SD SBW-12	1/28/88	Z0048013	I 100384	"
	CONTACTOR (1)	"	"	"	"
	SD LO-3 CONTACTOR(1)	"	"	"	"
VEPCO	IT EF3H050 (1)	6/9/88	Electrical Suplrs Norfolk, VA 1410Q34998	WO 28849	CAL BKR

<u>Plant or Utility</u>	<u>Items (Qty)</u>	<u>Date</u>	<u>Sold to and Purchase Order Nos.</u>	<u>Invoice¹</u>	<u>Company²</u>	
Carolina Power & Light	IT EF3B125 (2)	2/9/88	WESCO Raleigh, NC DS3645-80171	WO 24781	CAL BKR	
	EF3B125 (2)	2/26/88	"	WO 25377	"	
	EF3B040 (6)	3/11/88	DS3645-08047	WO 25811	"	
Omaha Pub. Pwr Dist	GE THEF136m1100(2)	1/22/85	GESCO Omaha, NE 86687	I 31695	GEN MAG	
Boston Ed.	W EH2050 (1)	3/18/85	WESCO Boston, MA	I 32348	GEN MAG	
Arkansas Power & Light	IT E42B020 (2)	1/28/88	Treadway Elect. Little Rock, AR 1217D	WO 24372	CAL BKR	
	IT QJ2B200 (2)	1/28/88	1215D	WO 24373	"	
	GE TEB122015WL (1)	1/28/88	1216D	WO 24376	"	
	IT QJ2B200 (2)	2/2/88	1245D	WO 24505	"	
	W MCP331000R (4)	2/17/88	1329D	WO 25104	"	
	IT QJ2B200 (2)	2/24/88	1357D	WO 25268	"	
	GE TEB132090WL (1)	3/1/88	1391D	WO 25485	"	
	W MCP431550CR (2)	3/1/88	1392D	WO 25529	"	
	W BAB3060H (1)	3/11/88	1464D	WO 25913	"	
	SD FAL3650-16M (2)	3/31/88	1589D	WO 26447	"	
	IT QJ2B200 (2)	4/8/88	1637D	WO 26707	"	
	IT QP1B020 (2)	5/6/88	1754D	WO 27676	"	
	GE TE111015 (1)	5/18/88	1805D	WO 28164	"	
	IT QJ2B200 (2)	6/7/88	1869D	WO 28757	"	
	GE TED134060WL (1)	6/16/88	1930D	WO 29038	"	
	W 656D148G03 (1)	3/15/88	1480D	I 52997	"	
	MOTOR OPERATOR					
	IT QJ2B200 (2)	6/7/88	1869D	I 53437	"	
	GE TEB122050WL (1)	6/30/88	19950	I 54164	"	
	GE THED136100WL (1)	11/30/87	9975D	WO 22497	"	
	GE TED126050 (1)	7/15/87	9324D	WO 18318	"	
	IT QJ3B200 (3)	7/31/87	9369D	WO 18774	"	
	IT QJ2B200 (3)	7/31/87	9369D	WO 18774	"	
	GE THED136060WL (2)	8/7/87	9430D	WO 19041	"	
	IT QJ3B200 (1)	8/13/87	9473D	WO 19245	"	
	GE THGB2120 (3)	8/7/87	9430D	WO 19041	"	
	IT QJ3B200 (6)	8/16/87	9424D	WO 19042	"	
	IT QJ2B200 (10)	8/16/87	9424D	WO 19042	"	

<u>Plant or Utility</u>	<u>Items (Qty)</u>	<u>Date</u>	<u>Sold to and Purchase Order Nos.</u>	<u>Invoice</u> ¹	<u>Company</u> ²
Florida Power Corp.	IT JL3B400 (2)	12/23/87	149278	WO 23293	CAL BKR
Houston Power & Light	IT HE9B040 (4)	8/20/87	Aucoin & Miller Houston, TX 0153721	WO 19474	CAL BKR

Notes:

- ¹ I - invoice; WO - work order
- ²
 - ATS - ATS Circuit Breakers, Inc
 - CAL BKR - California Breakers, Inc.
 - ECD - Electro Components Distributors
 - GEN BKR - General Circuit Breakers and Electrical Supply, Inc.
 - GEN MAG - General Magnetics/Electric Wholesale
 - HLC - HLC Electric Supply Co.
 - AC BKR - AC Circuit Breaker - Electrical Supply
- ³ Shipped to final destination from the distributor

LIST OF RECENTLY ISSUED
NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
88-51	Failures of Main Steam Isolation Valves	7/21/88	All holders of OLs or CPs for nuclear power reactors.
88-50	Effect of Circuit Breaker Capacitance on Availability of Emergency Power	7/18/88	All holders of OLs or CPs for nuclear power reactors.
88-49	Marking, Handling, Control, Storage and Destruction of Safe- guards Information	7/18/88	All holders of OLs or CPs for nuclear power reactors and all other licensed activities involving a formula quantity of special nuclear material.
88-48	Licensee Report of Defective Refurbished Valves	7/12/88	All holders of OLs or CPs for nuclear power reactors.
88-47	Slower-Than-Expected Rod-Drop Times	7/14/88	All holders of OLs or CPs for PWRs.
88-46	Licensee Report of Defective Refurbished Circuit Breakers	7/8/88	All holders of OLs or CPs for nuclear power reactors.
88-45	Problems In Protective Relay and Circuit Breaker Coordination	7/7/88	All holders of OLs or CPs for nuclear power reactors.
88-44	Mechanical Binding of Spring Release Device in Westinghouse Type DS-416 Circuit Breakers	6/24/88	All holders of OLs or CPs for nuclear power reactors.
88-43	Solenoid Valve Problems	6/23/88	All holders of OLs or CPs for nuclear power reactors.

OL = Operating License
CP = Construction Permit

The NRC is continuing its investigations and review of records on this issue and, if warranted, a further generic communication will be issued.

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact one of the technical contacts listed below or the Regional Administrator of the appropriate regional office.

Charles E. Rossi, Director
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

Technical Contacts: K. R. Naidu, NRR
(301) 492-0980

Jaime Guillen, NRR
(301) 492-1170

Attachments:

1. Shipments of Circuit Breakers to Nuclear Power Plants or Nuclear Utilities
2. List of Recently Issued NRC Information Notices

*SEE PREVIOUS CONCURRENCES *CMB*

CMB
D/DOEA:NRR
CERossi

07/20/88

*OGCB:DOEA:NRR

JGuillen

07/18/88

C/OGCB:DOEA:NRR
CHBerlinger

07/20/88

*VIB:DRIS:NRR

KRNaidu

07/18/88

*SC/VIB:DRIS:NRR

EBaker

07/18/88

*OI

07/19/88

*C/VIB:DRIS:NRR

EWBrach

07/18/88

*OGC

WHBriggs

07/19/88

*A/D/DRIS:NRR

BKGrimes

07/19/88

The NRC is continuing its investigation and review of records on this issue and, if warranted, further generic communication will be issued.

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact one of the technical contacts listed below or the Regional Administrator of the appropriate regional office.

Charles E. Rossi, Director
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

Technical Contacts: K. R. Naidu, NRR
(301) 492-0980

Jaime Guillen, NRR
(301) 492-1170

Attachments:

1. Shipments of Circuit Breakers to Nuclear Power Plants or Nuclear Utilities
2. List of Recently Issued NRC Information Notices

*SEE PREVIOUS CONCURRENCES

D/DOEA:NRR
CERossi
07/ /88

C/OGCB:DOEA:NRR
CHBerlinger
07/ /88

RPB:ARM
TechEd
07/ /88

*OGCB:DOEA:NRR
JGuillen
07/18/88

*VIB:DRIS:NRR
KRNaidu
07/18/88

*SC/VIB:DRIS:NRR
EBaker
07/18/88

OT
JGuillen
07/19/88
*C/VIB:DRIS:NRR
EWBrach
07/18/88

OGC
WHBriggs
07/19/88
*A/D/DRIS:NRR
BKGrimes
07/19/88

Discussed with
Ben Hayes &
Bill Hutchinson

W. Briggs stated
he had no objections
to this notice in a
discussion with E. Rossi
on 7/19/88
E Rossi

The NRC is continuing its investigation and review of records on this issue and, if warranted, further generic communication will be issued to addressees.

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact one of the technical contacts listed below or the Regional Administrator of the appropriate regional office.

Charles E. Rossi, Director
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

Technical Contacts: K. R. Naidu, NRR
(301) 492-0980

Jaime Guillen, NRR
(301) 492-1170

Attachments:

1. Shipments of Circuit Breakers to Nuclear Power Plants or Nuclear Utilities
2. List of Recently Issued NRC Information Notices

D/DOEA:NRR
CERossi
07/1/88
OGCB:DOEA:NRR
JGuillen
07/19/88

C/OGCB:DOEA:NRR
CHBerlinger
07/1/88
VIB:DRIS:NRR
KRNaidu
07/18/88

RPR:ARM
TechEd
07/1/88
SC/VIB:DRIS:NRR
EBaker
07/18/88

01
07/1/88
C/VIB:DRIS:NRR
EBrach
07/18/88

OGC
WHBriggs
07/1/88
A/P:DRIS:NRR
BGrimes
07/19/88